WHAT IS CLAIMED IS:

1. A communication system comprising:

a transmitter having a signal input means for receiving a signal, a modulating means for producing m signal points, where m is an integer not less than 4, in a signal space diagram through modulation of a carrier wave using an input signal fed from the signal input means, and a transmitting means for transmitting a modulated signal, in which the main procedure includes receiving the input signal containing a first data stream of n values and a second data stream, dividing the m signal points into n signal point groups, assigning n values of the first data stream to the n signal point groups respectively, assigning data of the second data stream to the signal points of each signal point group, and encoding said first and/or second data streams in a Trellis encoder.

2. A communication system comprising:

a receiver having a signal input means for receiving a modulated signal, a demodulating means for demodulating a received QAM signal representing P signal points in a signal space diagram, and an output means for outputting a demodulated signal, in which the main procedure includes dividing the P signal points into n signal point groups, demodulating a first data stream of which n values are assigned to the n signal point groups, demodulating a second data stream of which P/n values are assigned to P/n signal points of each signal point group for reconstruction of data

153

of the first and second data stream, and decoding said first and/or second data streams in a Trellis decoder.

3. A communication system comprising:

a transmitter having a signal input circuit, a modulator circuit for producing m ($m \geq 4$) signal points in a signal space diagram through modulation of a carrier wave using an input signal fed from the signal input circuit, and a transmitter circuit for transmitting a modulated signal, in which a main procedure includes receiving the input signal containing a first data stream of n values and a second data stream, dividing the m signal points into n signal point groups, assigning n values of the first data stream to the n signal point groups respectively, assigning data of the second data stream to the signal points of each signal point group, and encoding at least one of said first and second data streams by a Trellis encoder; and

a receiver having an input circuit for reception of said modulated signal transmitted from the transmitter, a demodulator circuit for demodulating a QAM modulated multi-level signal representing P signal points in a signal space diagram, and an output circuit, in which the main procedure includes dividing the P signal points into signal point groups, demodulating the first data stream of which n values are assigned to the n signal point groups, demodulating the second data stream of which P/n values are assigned to P/n signal points of each signal point group for reconstruction of data of the first and second data streams, and decoding at

154

least one of said first and second data streams in a Trellis decoder.

4. A communication system in accordance with claim 1, wherein said input signal is a video signal which is divided into a high frequency band video signal and a low frequency band video signal, and further said low and high frequency band video signals are transmitted as said first and second data streams.

5. A communication system in accordance with claim 2, wherein said modulated signal is a video signal including a low frequency band video signal of the first data stream and a high frequency band video signal of the second data stream, and a video signal is reconstructed from said high and low frequency band signals.

6. A communication system in accordance with claim 3, wherein said input signal is a video signal which is divided into a high frequency band video signal and a low frequency band video signal, and further said low and high frequency band video signals are transmitted as said first and second data streams.

7. A communication system in accordance with claim 1, wherein said input signal is a video signal which is divided into three, high, medium, and low, frequency band video signals, said high frequency band video signal is transmitted as said second data stream, and said low and medium frequency band video signals being 1-1 and 1-2 data streams respectively are time multiplexed and transmitted as said

155

first data stream.

8. A communication system in accordance with claim 4, wherein only said second data stream is encoded in the Trellis encoder.

9. A communication system in accordance with claim 7, wherein said 1-1 and 1-2 data streams are encoded in an error correcting encoder, and an error correcting code gain of said 1-1 data stream is set higher than that of said 1-2 data stream.

10. A communication system in accordance with claim 2, wherein said modulated signal is a video signal consisting of three, high, medium, and low, frequency band video signals, said high frequency band signal is received as said second data stream, said first data stream is time divided and demodulated as a 1-2 data stream of the medium frequency band video signal and a 1-1 data stream of the low frequency band video signal.

11. A communication system in accordance with claim 5, wherein only said second data stream is decoded in the Trellis decoder.

12. A communication system in accordance with claim 10, wherein said 1-1 and 1-2 data streams are decoded in an error correcting decoder, and an error correcting code gain of said 1-1 data stream is set higher than that of said 1-2 data stream.

13. A recording/playback system comprising:

a recording means having a signal input means for

156

receiving a signal, a modulating means for producing m signal points, where m is an integer not less than 4, in a signal space diagram through modulation of a carrier wave using an input signal fed from the signal input means, and a recording means for recording a modulated signal on a recording medium, in which the main procedure includes receiving the input signal containing a first data stream of n values and a second data stream, dividing the m signal points into n signal point groups, assigning n values of the first data stream to the n signal point groups respectively, and assigning data of the second data stream to the signal points of each signal point group.

14. A recording/playback system comprising:

a playback means having a signal reproducing means for reproducing a recorded signal from a recording medium, a demodulating means for demodulating a received QAM signal representing P signal points in a signal space diagram, and an output means for outputting a demodulated signal, in which the main procedure includes dividing the P signal points into n signal point groups, demodulating a first data stream of which n values are assigned to the n signal point groups, and demodulating a second data stream of which P/n values are assigned to P/n signal points of each signal point group for reconstruction of data of the first and second data stream.

15. A recording/playback system comprising:

a recorder having a signal input circuit, a modulator circuit for producing m (m≥4) signal points in a signal space

157

diagram through modulation of a carrier wave using an input signal fed from the signal input circuit, and a recording circuit for recording a modulated signal on a recording medium, in which a main procedure includes receiving the input signal containing a first data stream of n values and a second data stream, dividing the m signal points into n signal point groups, and assigning n values of the first data stream to the n signal point groups respectively, assigning data of the second data stream to the signal points of each signal point group; and

a playback unit having a signal reproducing circuit for reproducing a recorded signal from said recording medium, a demodulating circuit for demodulating a received QAM signal representing P signal points in a signal space diagram, and an output circuit for outputting a demodulated signal, in which the main procedure includes dividing the P signal points into n signal point groups, demodulating a first data stream of which n values are assigned to the n signal point groups, and demodulating a second data stream of which P/n values are assigned to P/n signal points of each signal point group for reconstruction of data of the first and second data stream.

16. A recording/playback system in accordance with claim 13, wherein said input signal is a video signal which is divided into a high frequency band video signal and a low frequency band video signal, and further said low and high frequency band video signals are recorded as said first and

second data streams.

17. A recording/playback system in accordance with claim 14, wherein said recorded signal is a video signal including a low frequency band video signal of the first data stream and a high frequency band video signal of the second data stream, and a video signal is reconstructed from said high and low frequency band signals.

18. A recording/playback system in accordance with claim 15, wherein said input signal is a video signal which is divided into a high frequency band video signal and a low frequency band video signal, and further said low and high frequency band video signals are recorded as said first and second data streams.

19. A recording/playback system in accordance with claim 13, wherein said input signal is a video signal which is divided into three, high, medium, and low, frequency band video signals, said high frequency band video signal is recorded as said second data stream, and said low and medium frequency band video signals being 1-1 and 1-2 data streams respectively are time multiplexed and recorded as said first data stream.

20. A recording/playback system in accordance with claim 16, wherein at least either of said first and second data streams is encoded in a Trellis encoder.

21. A recording/playback system in accordance with claim 19, wherein said 1-1 and 1-2 data streams are encoded in an error correcting encoder, and an error correcting code gain

of said 1-1 data stream is set higher than that of said 1-2 data stream.

22. A recording/playback system in accordance with claim 17, wherein at least either of said first and second data streams is decoded in a Trellis decoder.

23. A recording/playback system in accordance with claim 14, wherein said recorded signal is a video signal consisting of three, high, medium, and low, frequency band video signals, said high frequency band signal is received as said second data stream, said first data stream is time divided and demodulated as a 1-2 data stream of the medium frequency band video signal and a 1-1 data stream of the low frequency band video signal.

24. A communication system in accordance with claim 23, wherein said 1-1 and 1-2 data streams are decoded in an error correcting decoder, and an error correcting code gain of said 1-1 data stream is set higher than that of said 1-2 data stream.

25. A communication system comprising:

a transmitter of OFDM type in which an input signal is serial to parallel converted into a plurality of input signals and then transmitted through modulation in a plurality of modulators whose carrier waves are 90°-out-of-phase with each other, each of said modulators having a signal input means for receiving an input signal, a modulating means for producing m signal points, where m is an integer not less than 4, in a signal space diagram through

160

modulation of said carrier wave using an input signal fed from the signal input means, and a transmitting means for transmitting a modulated signal, in which the main procedure includes receiving the input signal containing a first data stream of n values and a second data stream, dividing the m signal points into n signal point groups, assigning n values of the first data stream to the n signal point groups respectively, and assigning data of the second data stream to the signal points of each signal point group.

26. A communication system comprising:

a receiver having a signal input means for converting a modulated signal into a plurality of carrier waves in an FFT converter, a demodulating means for demodulating a received QAM signal representing P signal points in a signal space diagram, and an output means for outputting a demodulated signal, in which the main procedure includes dividing the P signal points into n signal point groups, demodulating a first data stream of which n values are assigned to the n signal point groups, and demodulating a second data stream of which P/n values are assigned to P/n signal points of each signal point group for reconstruction of data of the first and second data stream.

27. A communication system comprising:

a transmitter of OFDM type in which an input signal is serial to parallel converted into a plurality of input signals and then transmitted through modulation in a plurality of modulators whose carrier waves are 90°-out-of-

phase with each other, each of said modulators having a signal input circuit for receiving an input signal, a modulating circuit for producing m (m≥4) signal points in a signal space diagram through modulation of said carrier wave

5   using an input signal fed from the signal input circuit, and a transmitting circuit for transmitting a modulated signal, in which the main procedure includes receiving the input signal containing a first data stream of n values and a second data stream, dividing the m signal points into n

10   signal point groups, assigning n values of the first data stream to the n signal point groups respectively, and assigning data of the second data stream to the signal points of each signal point group; and

a receiver having a signal input circuit for converting

15   said modulated signal transmitted from said transmitting circuit into a plurality of carrier waves in an FFT converter, a demodulating circuit for demodulating a received QAM signal representing P signal points in a signal space diagram, and an output circuit for outputting a demodulated

20   signal, in which the main procedure includes dividing the P signal points into n signal point groups, demodulating a first data stream of which n values are assigned to the n signal point groups, and demodulating a second data stream of which P/n values are assigned to P/n signal points of each

25   signal point group for reconstruction of data of the first and second data stream.

28. A communication system in accordance with claim 25,

162

wherein said input signal is a video signal which is divided into a high frequency band video signal and a low frequency band video signal, and further said low and high frequency band video signals are transmitted as said first and second

5   data streams.

29. A communication system in accordance with claim 26, wherein said modulated signal is a video signal including a low frequency band video signal of the first data stream and a high frequency band video signal of the second data stream,

10   and a video signal is reconstructed from said high and low frequency band signals.

30. A communication system in accordance with claim 27, wherein said input signal is a video signal which is divided into a high frequency band video signal and a low frequency

15   band video signal, and further said low and high frequency band video signals are transmitted as said first and second data streams.

31. A communication system in accordance with claim 25, wherein said input signal is a video signal which is divided

20   into three, high, medium, and low, frequency band video signals, said high, medium, and low frequency band video signals are transmitted as said second, a 1-2, and 1-1 data streams respectively.

32. A communication system in accordance with claim 28,

25   wherein at least either of said first and second data streams is encoded in a Trellis encoder.

33. A communication system in accordance with claim 31,

wherein said 1-1 and 1-2 data streams are encoded in an error correcting encoder, and an error correcting code gain of said 1-1 data stream is set higher than that of said 1-2 data stream.

34. A communication system in accordance with claim 26, wherein said modulated signal is a video signal consisting of three, high, medium, and low, frequency band video signals, said high frequency band signal is received as said second data stream, said first data stream is time divided and demodulated as a 1-2 data stream of the medium frequency band video signal and a 1-1 data stream of the low frequency band video signal.

35. A communication system in accordance with claim 29, wherein at least either of said first and second data streams is decoded in a Trellis decoder.

36. A communication system in accordance with claim 34, wherein said 1-1 and 1-2 data streams are decoded in an error correcting decoder, and an error correcting code gain of said 1-1 data stream is set higher than that of said 1-2 data stream.

37. A communication system in accordance with claim 1, wherein a transmission or reception of said second data stream is interrupted when a code error rate of said second data stream is increased during transmission or reception of said first and second data streams.

38. A communication system in accordance with claim 2, wherein only said first data stream data is received for a

predetermined period of time when a code error rate of said second data stream is increased during a reception of said first and second data streams.

5

10

15

20

25